FISHERY RESEARCH

Evaluation and Monitoring of Wild/Natural Steelhead Trout Production

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Project Progress Report

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TABLE OF CONTENTS

Page

INTRODUCTION 1

METHODS 1

Adult Escapement Monitoring 1
Juvenile Monitoring 1

RESULTS AND DISCUSSION 2

Adult Escapement Monitoring 2
Chamberlain Creek 2
West Fork Chamberlain Creek 2
Running Creek 4
Rush Creek 4
Rapid River 4

Juvenile Monitoring 5

List of Tables

Table 1. Dates of adult weir operation by stream, 1996. 1

Table 2. Steelhead redd counts, 1996. 3

Table 3. Adult chinook salmon and steelhead trapped in weirs in 1996. 4

Table 4. Fish passing Running Creek weir, July 20 to September 7, 1996, as determined by underwater video. 4

Table 5. Juvenile steelhead captured, tagged, and estimated trap efficiency, in Running Creek emigrant trap, 1996 5

Table 6. Wild juvenile steelhead PIT tag interrogations at the lower Snake and Columbia River dams, spring 1996. 5

INTRODUCTION

This project was initiated to provide additional, and more definitive, information regarding wild steelhead *Oncorhynchus mykiss* populations in Idaho. Important streams for wild steelhead production were identified and selected for monitoring. Monitoring activities employed among streams varied, but generally included: aerial redd counts, placement of adult weirs, enumeration of juveniles through mask and snorkel counts, and emigrant trapping. This report details activities during the 1996 field season.

METHODS

Adult Escapement Monitoring

Steelhead redds were surveyed from a helicopter on May 9 and 10, 1996.

Steelhead weirs in Chamberlain, West Fork Chamberlain, Running, and Rush creeks were installed from March 26 through April 18 and all were removed by May 13 (Table 1). A weir to capture adult chinook salmon in Running Creek was installed on July 7 and removed on September 9. A video camera with an infrared light was attached above the weir box on the Chamberlain Creek weir to record fish as they moved through the box and allow length estimation.

Table 1. Dates of adult weir operation by stream, 1996.

Stream	Weir Installed	Weir Removed
Chamberlain Creek	April 17	May 12
West Fork Chamberlain Creek	April 18	May 12
Running Creek	March 26	May 12
Running Creek	July 7	September 9
Rush Creek	April 4	May 13
Rapid River	March 13	[a]

[a] Trap remained in operation past the steelhead migration to capture returning hatchery chinook.

Juvenile Monitoring

An emigrant trap (rotary screw trap) was installed in Running Creek on March 20 and continued through May 13, after which it was removed due to high water. The trap was reinstalled on July 7 and operated through November 2. An emigrant trap was also installed in Rapid River during the fall of 1996. Fish captured in the trap were PIT tagged and taken above the trap for release to determine trap efficiency. Tagging procedures included anesthetizing fish with MS-222 (buffered with sodium bicarbonate) and injecting PIT tags into the body cavity using a 12-gauge hypodermic needle and modified syringe. Prior to use, PIT tags, needles, and

syringes were sterilized by soaking in a 70% alcohol solution for at least 10 minutes. Syringes and needles were not reused until they were sterilized. After each tag was inserted, a loop style PIT tag detector was used to detect and send the tag codes to a PIT tag file in a battery powered laptop computer. The Passive Integrated Transponder Tag Information System (PTAGIS) was queried for unique detections for fish tagged in 1995 and emigrating in 1996 at Lower Granite, Little Goose, Lower Monumental, and McNary dams.

Fish abundance in Chamberlain, West Fork Chamberlain, Running, and Upper Big creeks, and Rapid River were indexed through mask and snorkel counts of General Parr Monitoring sites.

RESULTS AND DISCUSSION

Adult Escapement Monitoring

Aerial steelhead redd counts indicate escapement in 1996 was generally similar or lower than what was observed in 1995 and continues the trend of decreasing escapement since counts began in 1987 (Table 2).

Chamberlain Creek

The weir withstood moderate flows and debris. One steelhead was observed in the trap box on May 9, but escaped before the trap box could be closed (Table 3). Sex was not determined and no estimation of length was made. With the brief observation, it appeared to be a smaller fish, probably an A-run steelhead. On three separate occasions icing conditions occurred at the weir. However, the ice was removed before the weir was lifted off the sill beam, and at no time was the weir inoperative. On several occasions, the weir attendant walked the streambank from 0.5 miles above the weir to approximately 1.5 miles below the weir looking for steelhead activity but none was observed.

West Fork Chamberlain Creek

During two separate occasions, on April 19 and 21, icing caused the trap box to lift off the substrate, creating a small opening where a fish could pass undetected for approximately one hour while the ice was being removed. No fish were trapped in the West Fork weir during its operation (Table 3). On several occasions, the weir attendant walked the streambank from the mouth of West Fork Chamberlain Creek to approximately 0.75 miles above the weir looking for steelhead activity but none was observed.

Table 2. Steelhead redd counts, 1996.

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
South Fork Salmon River										
Johnson Creek	12	23	NC	23	64	27	66	28	29	10
South Fork Poverty				62	76	31	75	30	44	32
South Fork Darling Cabin				25	39	17	49	25	34	31
South Fork Oxbow				37	31	26	34	11	14	2
South Fork Krassel					38	8	23	5	15	17
Middle Fork Salmon River										
Bear Valley Creek		27	11	62	32	26	28	17	13	10
Marsh Creek				23	1	10	7	1	1	1
Sulphur Creek		17	7	14	6	5	18	2	2	3
Loon Creek				38	17	8	NC	3	4	5
Camas Creek		27		55	26	3	NC	12	10	6
Big Creek				44	25	NC	NC	3	4	5
South Fork Camas				6	1	4	3	0	1	0
Salmon River										
Valley Creek				8	6	26	9	4	5	2
Alturas				6	NC	3	NC	NC	NC	NC
Upper Salmon										
Pole to Busterback				6	0	0	0	NC	NC	NC
Busterback to Alturas Lake Creek				1	0	0	12	NC	NC	NC
Alturas Lake to Hell Roaring Bridge				16	2	17	3	NC	NC	NC
Hell Roaring Bridge to Weir				33	13	12	21	NC	NC	NC
Weir to Redfish Lake				101	24	26	79	30	18	NC
East Fork Salmon River										
Germania to Weir				9	3	0	NC	NC	NC	NC
Weir to Herd Creek				NC	15	10	NC	NC	NC	NC
Chamberlain Creek				6	1	0	1	0	1	0
West Fork Chamberlain Creek				5	0	3	5	0	0	0
South Fork Clearwater River										
Crooked River										
Mouth to Weir			NC	NC	1	2	NC	0	NC	0
Weir to Meanders			NC	NC	9	8	0	0	0	0
Meanders			NC	NC	25	5	1	1	2	0
Meanders to Canyon			NC	NC	6	1	0	0	0	0
Canyon to Bridge				128	4	3	1	0	2	0
Bridge to Orogrande				91	5	1	2	2	0	0
Lochsa River										
White Sand Creek			NC	10	7	20	NC	12	3	2
Storm Creek				11	0	3	NC	3	8	1
Crooked Fork				33	7	10	NC	8	11	1
Fish Creek				9	0	3	NC	5	5	NC
Selway River										
Bear Creek				15	2	4	NC	6	8	2
East Fork Moose							NC	3	6	6

Table 3. Adult chinook salmon and steelhead trapped in weirs in 1996.

Stream	Steelhead Captured	Chinook Passing Weir
Chamberlain Cr.	1	No Weir
West Fork Chamberlain Cr.	0	No Weir
Running Cr.	1[a]	3
Rush Cr.	7[a]	No Weir
Rapid R.	41	Not Applicable

[a] One of these fish was impinged between weir pickets and killed.

Running Creek

No steelhead were trapped, but on April 19, a 31-inch male was impinged and killed between weir pickets near the trap entrance (Table 3). Mesh screening was installed around the entrance to reduce the spacing between pickets and no other injuries to fish were observed. The weir withstood unusually high flows and debris.

During the trapping season for chinook, the underwater video system was nonfunctional for about 500 hours. Additionally, some of the fish passing through could not be properly identified and were labeled as unidentifiable trout (UT). Review of the video revealed definitively that three chinook salmon escaped above the weir (Table 4). There were eight other possible sightings, however these fish may have been large bull trout (Table 4). On August 4, a spawned chinook salmon was found approximately 500 meters below the weir.

Rush Creek

On April 10, unseasonably warm weather caused the water level to rise abruptly, bringing heavy debris loads against the weir. Three weir panels were removed on April 10 but were replaced on April 13. The weir was out of operation for 69 hours. No other flow or debris problems were encountered through the remainder of the trapping period. On May 12, a 26-inch male steelhead was impinged and killed between weir pickets near the trap entrance. Mesh screening was subsequently placed around the trap box entrance (Table 3). During the trapping period, one male and five females were passed above the weir.

Rapid River

A total of 41 steelhead were trapped (Table 3). The first wild steelhead was captured on April 2 and the last one was captured on May 30. The weir was closed to remove sand and silt from May 27 to May 28.

Table 4. Fish passing Running Creek weir, July 20 to September 7, 1996, as determined by underwater video.

Chinook	Possible Chinook	Unidentified Trout	Cutthroat	Rainbow	Bull Trout	White Fish
3	8	57	9	0	11	138

Juvenile Monitoring

A total of 128 steelhead were tagged and released in at the Running Cr. screw trap (Table 5). One tagging mortality occurred. Sixty steelhead were tagged and released at the Rapid R. trap.

Detection rate for steelhead tagged in 1995 and detected in 1996 ranged from 19% to 62% (Table 6).

Juvenile densities observed while snorkeling reflected the low number of adult spawners in 1995 in each study stream. Results of snorkel surveys for Chamberlain, West Fork Chamberlain, Running, and Upper Big creeks, and Rapid River are recorded in the GPM database and appear in the 1996 GPM annual report.

Table 5. Juvenile steelhead captured, tagged, and estimated trap efficiency, in Running Creek emigrant trap, 1996

Date of Operation	# of Fish Caught	# of Fish Marked	# of Recaptures	Efficiency
3/20 - 5/13	29	8	1	12.5%
7/7 - 8/13	33	24	8	33.3%
8/14 - 9/24	61	60	27	45.0%
9/25 - 11/2	44	43	22	51.2%

Table 6. Wild juvenile steelhead PIT tag interrogations at the lower Snake and Columbia River dams, spring 1996.

			Unique Detections by Dam			
Stream	# of Fish Tagged	Overall Detection Rate	Granite	Goose	Lower Monumental	McNary
Chamberlain Cr.	145	19	9	6	3	1
Running Cr.	244	62	22	23	15	2
Rapid R.	194	60	32	19	8	1

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